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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/533,613	03/22/2000	Fred E. Stanke	21964-708	7897

7590 05/26/2004

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EXAMINER

PHAM, HOA Q

ART UNIT PAPER NUMBER

2877

DATE MAILED: 05/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N .		Applicant(s)	
	09/533,613		STANKE, ET AL.	
	Examiner		Art Unit	
	Hoa Q. Pham		2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 30-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 30-44 is/are rejected.
- 7) ☒ Claim(s) 45 and 46 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/5/04 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 30-42 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kodera et al (5,695,601) in view of Norton et al (5,486,701), and Hignette et al (5,191,393).

Regarding claims 30 and 40-41, Kodera et al (of record) discloses a wafer processing station (20) and a metrology station (30) apart from but coupled to the processing station wherein the metrology station comprises an ultraviolet light source (column 3, lines 30-37) illuminating a measurement region of a surface of a wafer (10).

(See figure 3). Kodera et al does not explicitly teach steps of: (1) measuring spectral

content of the broadband light beam reflected from the wafer, (2) measuring the spectral content of the broadband light beam which has not been reflected from the wafer, and determining the wafer based on the first and second measurements; however, such a feature is known in the art, for example, as taught by Norton et al. Norton et al, from the same field of endeavor, teaches steps of: (1) measuring spectral content of the broadband light beam (46) reflected from the wafer (3) by detector (93), (2) measuring the spectral content of the broadband light beam (48) which has not been reflected from the wafer by detector (95), and determining the wafer based on the first and second measurements the measurements, where the second measurement is used to correct for system characteristics (correct for lamp noise) (see column 5 line 60 through column 6 line 20). It would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the optical detection unit of Kodera et al by an optical inspection system of Norton et al. The rationale for this modification would have arisen from the fact that both systems are used for measuring the thickness of the wafer; a substitution one for another is generally recognized as being within the level of ordinary

skill in the art. Hignette et al teaches that the light source (22) and fiber (8) are located outside of the metrology device (2) (see figures 1 and 7) and a preliminary step of aligning (column 9, line 25 through column 10, line 12 and claim 3). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include in Kodera et al and Norton et al a "preliminary alignment step" and an "optical fiber so that the light source is located outside the measuring device" as taught by

Hignette et al. The rationale for this modification would have arisen from the fact that by

aligning the wafer with respect to the optical inspection system would increase the accuracy of the measurement and locating the light source outside the device would avoid the harmful effects of the light source as suggested by Hignette et al (column 5, lines 62-68).

Regarding claim 36, Norton et al teaches that both beams (46, 48) pass through their respective spectrometer pinholes substantially parallel (column 3 lines 41-49). Thus, the first and second measurements are obtained simultaneously.

Regarding claim 37, column 1, lines 18-19 of Norton et al for UV range.

Regarding claims 38-39, see column 2, lines 4-16 of Norton et al for the use of Xenon lamp, which covers from UV to near infrared.

Regarding claim 31, see beam divider (45) in figure 1 of Norton et al.

Regarding claim 32, see mirror (16,36) in figure 2 of Norton et al.

Regarding claim 33, see objective lens (141) in figures 4-7 of Norton et al or lens (32) and self-focusing system in column 6 lines 37-44 of Hignette et al.

Regarding claims 34-35, see figure 2 of Koder et al.

Regarding claim 42, Hignette et al teaches that the use of self-focusing system which maintains the lens at a constant altitude with respect to the object (column 6, lines 37-44).

Regarding claim 44, see pinholes (52,54) in figure 2 of Norton et al.

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4. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koderá et al, Norton et al and Hignette et al as applied to claim 30 above, and further in view of Akamatsu (5,258,823).

Akamatsu teaches that the wafer is aligned with respect to the optical inspection on the basis of detecting the edge position of the wafer while rotatable chuck is rotated (see abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the alignment system of Hignette et al by a system of Akamatsu because they would function in the same manner.

Allowable Subject Matter

5. Claims 45-46 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

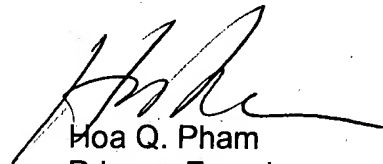
6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Holzapfel et al (5,872,633) discloses a method and apparatus for measuring the thickness of a layer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoa Q. Pham whose telephone number is (571) 272-2426. The examiner can normally be reached on 7:30AM to 6 PM, Monday through Thursday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Hoa Q. Pham
Primary Examiner
Art Unit 2877

HP
May 24, 2004
